

REMARKS

Claim 15 has been amended to recite that the niobium powder for capacitors contains niobium monoxide crystal in an amount of from 0.05 to 20% by mass or hexaniobium monoxide crystal in an amount of from 0.05 to 20% by mass. Furthermore, the niobium powder has an average particle size of 0.1 μm to tens of μm . Support is found, for example, in paragraph [29] bridging pages 6-7 of the specification. As recited in new claims 31 and 32, the niobium powder for capacitors contains Nb. As recited in new claim 33, the balance of the powder is niobium.

Entry of the amendments and review and reconsideration on the merits are requested.

Claims 15, 16, 18, 19, 21, 22 and 24-30 were rejected under 35 U.S.C. § 102(a) as being anticipated by WO 00/15555 (WO '555). WO '555 was cited as disclosing a powder comprising partially reduced niobium oxide, including an atomic ratio of 1:1 (NbO) said to have an oxidized amount within the scope of present claim 16. The reduced niobium oxide has a primary particle size of preferably 1 μm or less (page 8, lines 11-13 of WO '555). The reduced niobium oxides can also contain nitrogen in an amount of 100 ppm to 3,000 ppm (page 7, lines 19-20). With respect to present claims 24-30, the Examiner cited to various US patents bridging pages 10-11.

Applicants traverse, and respectfully request the Examiner to reconsider in view of the amendments to the claims and the following remarks.

WO '555 is discussed in Paragraph [07] at page 2 of the specification. The present inventors note that WO '555 discloses a capacitor using partially reduced niobium oxide, but found that capacitor performance is deteriorated when subjected to an accelerated test at high temperature.

To the contrary, the present inventors found that when a niobium powder containing niobium monoxide crystal or hexaniobium monoxide crystal is used as the starting material of a niobium sintered body, a capacitor having good-temperature characteristics can be obtained (paragraph [08] at page 3 of the specification).

WO '555 discloses NbO crystal prepared by partially reducing Nb_2O_5 (see WO '555 bridging pages 7-8). This partially reduced niobium oxide is used to form sintered pellets having a CV/g as shown bridging pages 13-14 (Example 1). Two differences between the present invention and WO '555 are that the present claims are directed to a niobium powder containing up to 20% by mass of niobium monoxide crystal and hexaniobium monoxide crystal, whereas WO '555 discloses a powder that mainly contains the reduced oxide, and which powder is not a niobium powder.

For example, in Example 2 of WO '555, Nb_2O_5 starting material was partially reduced in the presence of a Ta or Nb getter to $NbO_{1.1}$, $NbO_{0.7}$ and/or NbO. See the Table at page 16 of WO '555. That is, the partially reduced product of WO '555 contained well in excess of 20 % by mass of niobium monoxide crystal. Also, the reduced product is not a niobium powder as required by the present claims, because the reduced product does not contain Nb or contains only a small amount of Nb as a getter material residue. For example, as indicated by reference to Sample 18 of WO '555, although X-ray diffraction shows that some of the getter material remains as Nb, most was converted to a reduced oxide (page 14, lines 24-26). That is, even Sample 18 containing a small amount of Nb getter residue is not a "niobium powder" as required by the present claims.

Further thereto, Sample 15 describes converting a solid Nb_2O_5 pellet into a porous slug of Nb oxide, which is then sintered to a sheet of Nb metal to create an anode lead connection and anodized. This is not a niobium powder and predominantly contains NbO well in excess of an amount of up to 20 % by mass of niobium monoxide crystal as required by the present claims.

Whereas WO '555 prepares a sintered body from the partially reduced niobium oxide powder, in accordance with the present invention niobium monoxide crystal and/or hexaniobium monoxide crystal, in specified amounts, is mixed with a primary Nb powder, which is then molded together with a niobium lead and then sintered (see Example 1 bridging pages 14-15 of the specification).

As discussed by reference to the working examples (see Table 1 at page 17 and paragraph [67]), when the niobium monoxide crystal or hexaniobium monoxide crystal is present in the niobium powder in an amount of 0.05% or more, the high temperature characteristics are improved, but when the crystal amount exceeds 20% by mass, the initial capacitance decreases.

Moreover, the content of the niobium monoxide or hexaniobium monoxide in the niobium powder as claimed in claim 15 does not merely indicate oxygen content, but rather is the content of crystals in the niobium powder. This is clearly set out in claim 15 and is not met by the reduced oxides of WO '555.

To more clearly define over WO '555, claim 15 has been amended to recite that the niobium powder contains niobium monoxide crystals in an amount from 0.05 to 20% by mass or hexaniobium monoxide crystal in an amount of from 0.05 to 20% by mass, and balance Nb. This

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amendment distinguishes over WO '555 where the powder primarily contains partially reduced niobium oxide.

Moreover, the above content refers to the amount of niobium monoxide crystals or hexaniobium monoxide crystals in the niobium powder.

Furthermore, the partially reduced product of WO '555 is not a "niobium powder" as required by the present claims. That is, the partially reduced product of WO '555 contains either no Nb or Nb in small amount as a getter residue. This is not a niobium powder. In this regard, new claim 33 recites that the niobium powder contains niobium monoxide crystal or hexaniobium monoxide crystal (each in an amount of up to 20% by mass) and balance Nb, although this does not necessarily mean 100 % pure niobium.

For the above reasons, it is respectfully submitted that the present claims are not anticipated by WO '555, and withdrawal of the foregoing rejection under 35 U.S.C. § 102(a) is respectfully requested.

Withdrawal of all rejections and allowance of claims 15, 16, 18, 19, 21, 22 and 24-33 is earnestly solicited.

In the event that the Examiner believes that it may be helpful to advance the prosecution of this application, the Examiner is invited to contact the undersigned at the local Washington, D.C. telephone number indicated below.

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Respectfully submitted,



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